Background paper regarding water-right applications for Puget Sound Energy's proposed Lake Tapps Water Supply Project

Disclaimer: The following document has been drafted for discussion and feedback purposes only, and does not necessarily constitute the Department of Ecology's final determination on any of the issues or assertions discussed.

Introduction

Puget Sound Energy (PSE) has submitted three interrelated water right applications to the Washington State Department of Ecology (Ecology). The intent of these applications is to secure water rights to supply the long-range municipal water needs including industrial and commercial purposes of the Central Puget Sound region. On March 20, 2001, Ecology issued a Preliminary Permit, which was a request for information related to the project. PSE and Cascade Water Alliance (CWA) have entered into a memorandum of understanding to jointly pursue water rights to put water from Lake Tapps to beneficial use.

The water supply project is proposed to operate in conjunction with PSE's existing White River hydropower project, such that the combined diversion from the White River for both projects would not exceed 2,000 cubic feet per second (1,447,940 acre-feet a year). The diversion and storage rights proposed under PSE's request mirror the current operations of Lake Tapps, with the difference being that the water supply project would add a diversion from Lake Tapps of up to 150 cubic feet per second (cfs) peak, 100 cfs annual average.

This background paper provides information about the following general aspects of the project:

- **Public Water Supply and Demand (including development schedule)**
- **Water Availability/Environmental Effects**
- **Public Interest (including the concept of overriding consideration of public interest)**

These areas are critical to Ecology's evaluation of whether to approve or deny the requested water right. Ecology has been reviewing and analyzing information submitted by PSE and CWA since the applications were received in 2000. Before issuing a Report of Examination regarding the water rights applications, Ecology would like feedback from the public on the above issues.

Public Water Supply and Demand

Methodology for analyzing water supply and demand
In its water-right application, PSE, in collaboration with CWA, provided a public water supply and demand analysis. Their analysis is based on regional water supply needs described in the 2001 Central Puget Sound Water Supply Outlook (Outlook). PSE's assessment was further defined by a specific evaluation of the water needs of existing and prospective CWA members.

The 2001 water-supply Outlook model was based on regional economic and demographic projections prepared by the Puget Sound Regional Council to 2020 and U.S. Department of Commerce forecasts to about 2045.

Ecology's evaluation reflects that projected regional demand would be partially offset by existing ground water supplies, wholesale contracts from Seattle and Tacoma public utilities and from alternative sources such as Snohomish County Regional Water Authority's Weyerhaeuser water right and Pierce County's Lonestar right.

Ecology has not made any determination regarding the extent or validity of alternative water supplies. The department assumes that Lake Tapps water would be developed only if it were actually needed and proved cost-effective.

Future Demand Projections
Since the 2001 water-supply Outlook was not intended to provide as detailed an assessment as individual water system plans, Ecology is trying to determine whether PSE and CWA's evaluation of growth demands until 2050 are reasonable for long-term planning purposes.

Source Exchange
In PSE's water-right application, they have proposed that water from Lake Tapps would be used to supplement or replace existing water-supply sources in some areas of King, Pierce and Snohomish counties in order to maintain seasonal stream flows for fish. Utilities represented by CWA would be able to replace some of their local water supplies with this source exchange water from Lake Tapps, especially during the summer and fall when human demands for water are at its height. PSE and the CWA have proposed that the total daily demand for source-exchange water from Lake Tapps would be about 16 million gallons a day.

Ecology is currently evaluating how much water would be allocated for source exchange. Ecology must also determine what conditions could be placed as a condition on a water-right permit so the agency could be confident that a source exchange program would be successful and environmentally beneficial.

Development Schedule
Lake Tapps is being proposed as a long-term regional supply (50 years and beyond). Given the long lead time required to develop the infrastructure to deliver this potential new supply of water, Ecology is:

1. Evaluating whether it is reasonable to allocate water that is intended to meet future supply needs in excess of 20 years.

2. Assessing the type of development schedule that would best ensure that water would be used appropriately with high standards for conservation and source exchange.

3. Determining whether PSE would need to provide a periodic review of public water supply and demand for the proposed Lake Tapps service area to ensure that the water right would be appropriately developed over the span of the permit.

4. Considering if it should create innovative interim steps that enforce a specific time line regarding PSE's Lake Tapps proposal.

Seattle and Tacoma Public Water Supply Assumptions
Ecology is assessing what assumptions need to be made regarding the availability of public water supplies by 2050 for utilities within the CWA, as well as other potential wholesale water customers in the three-county area. The department is evaluating whether any as-yet-undeveloped Seattle or Tacoma water supplies need to be included in this projection. Seattle and Tacoma have asserted that they have water to sell – therefore, Ecology is evaluating whether this should prevent CWA from developing its own water supplies.

Other Significant Supply Sources
The department is determining whether all other potential, significant supply sources been adequately considered and whether the projections are reasonable.

Place of Use
The proposed place of use for water from Lake Tapps includes much of the central Puget Sound, including the entire proposed service areas by both Seattle and Tacoma public utilities. Since the intent of the application is to develop a regional public-water supply and promote flexible water use, Ecology is evaluating how restrictive the agency should be in evaluating the place of use for the lake water.

Water Availability/Environmental Effects

Proposed Instream Flow Protection and Augmentation Plan
In 1980, Ecology adopted an Instream Resource Protection Program (Washington Administrative Code 173-510) for the Puyallup-White River basin. The rule established minimum instream flows (instream flows) for the Puyallup River. PSE has proposed an Instream Flow Protection and Augmentation Plan associated with its proposed Lake Tapps public water supply project. This plan is designed to achieve two objectives:

1. Ensure that the proposed water supply project would not increase the frequency and magnitude of times that instream flows are not met in the lower Puyallup River under baseline conditions.

2. Provide a way to enhance instream flows to reduce the frequency and magnitude of times that instream flows are not met in the lower Puyallup River from baseline conditions, to the extent compatible with other project objectives, including power supply.

To achieve the first objective, PSE proposes releasing "avoidance" water whenever the Puyallup River is projected to fall below established instream flows. This water would directly offset the impact of water being withdrawn for water supply purposes from Lake Tapps when flows are projected not to be met. Water would be released continuously at a rate necessary to make up any shortfalls in established stream flows. For example, if the projected stream flow shortfall was 75 cubic feet per second (cfs) and the water supply withdrawal was 100 cfs, then 75 cfs would be released.

To achieve the second objective, PSE also proposes releasing "enhancement" water whenever instream flows are still not met after avoidance water has been released. Under the proposal, Ecology would work in conjunction with the Muckleshoot and Puyallup Indian tribes to request additional enhancement water. However, between Memorial and Labor days, the availability of

additional enhancement water may be limited if lake levels are of a concern. The annual enhancement-water budget would be 11,100 acre feet.

Environmental Analysis

Under a preliminary permit issued by Ecology, PSE was required to perform a number of assessments including flow and water-quality modeling for the Puyallup and White rivers using a range of differing factors. Several other specific environmental concerns were addressed, including the potential effects stream-flow augmentation would have on water quality and fish habitat. Ecology's conclusions, based on an analysis of PSE's work and other information provided by the Puyallup and Muckleshoot Indian tribes are summarized below:

1. **Water supply availability –** Surface-water flow modeling conducted by PSE suggests that sufficient water would be available to meet water demand or source exchange needs under all climatic scenarios evaluated. Results suggest that although the surface-water elevation of Lake Tapps would occasionally be drawn down from target levels during model simulations, the water elevation would never approach 515 feet, the minimum elevation for water supply withdrawal. This indicates that water would reliably be available for water supply or source exchange, even during drought years.

2. **Flow and water quality in the White River (bypass reach) –** No changes are proposed to the diversion from the White River, so it is assumed that PSE's proposal would have no beneficial or detrimental impact on stream flows or water quality in the bypass reach.

3. **Lake Tapps reservoir elevation** – PSE's modeling predicts that the proposed Instream Flow Protection and Augmentation Plan would cause occasional drawdown of Lake Tapps. In most years, summer recreation would not be affected by operation of the water supply project. However, some scenarios indicated a drawdown of more than one foot for periods of several weeks, particularly in late August and September. These cases would be expected to occur less than one in five years. Some drought scenarios indicate there could be three or more weeks where lake water levels could decrease up to four feet.

4. **Instream flows in the lower White and Puyallup rivers –** An evaluation of PSE's modeling generally suggests that the affects of the water supply project on stream flows in the lower White and Puyallup rivers would vary depending on how the Lake Tapps reservoir was operated. It is predicted that the proposed project would:

    - Increase flows 10 percent of the time (during augmentation).
    - Reduce flows by less than 150 cubic feet per second (cfs) 70 percent of the time (normal operations).
    - Reduce flows by more than 150 cfs 20 percent of the time (post-augmentation).

    Flow modeling further suggests the frequency and magnitude of times that instream flows are not met in the lower Puyallup River would decrease under PSE's stream-flow augmentation plan. PSE's augmentation plan would have similar affects on the White River except that:

    - The relative magnitude of changes would be much lower because of the inflow from the mainstem Puyallup River and tributaries

- The timing of the change would be slightly affected due to downstream travel time

5. **Water quality in the lower White and Puyallup rivers** – The potential impacts of the water supply project on water quality can be generally summarized by:

    - Observing that Lake Tapps releases typically have lower dissolved oxygen (DO), higher temperature, and lower pH than that of the upstream White River.
    - Reducing the tailrace withdrawal to accommodate the water supply would change the ratio of Lake Tapps water to bypass reach water in the lower White River.
    - Based on modeling results a reduction in flow from Lake Tapps would result in higher DO, lower temperature, and higher pH for the White River downstream of the tailrace, resulting in slightly improved water quality.

In general, results of water quality modeling suggest that changes in water quality would be marginal in magnitude. None of the predicted changes would result in violations of State Water Quality Standards.

6. **Fish and Aquatic Life** – The Puyallup-White River system supports up to eight species of salmonid fishes and has significant anadromous runs of Chinook, Coho, pink and chum salmon as well as steelhead and cutthroat trout. Based on the analyses, the potential negative impacts to fish are related to the reduced duration of the daily hydropower peak, which may affect smolt out-migration and access to higher elevation off channel habitat for one to two hours per day during normal operations. These impacts are offset by the higher low flows resulting from the augmentation plan, and marginally improved water quality most of the time. There would be some tradeoffs with regard to fish, but the project would generally be beneficial to fish mainly because of the increased flows during low flow periods as a result of the augmentation plan. Use of source exchange water could also result in benefits to fish outside the Puyallup-White basin.

Public Interest

In 1980, Ecology adopted rules governing future water allocation from the Puyallup-White River basin. The rule established base instream flows for basin's perennial rivers and streams to protect fish, wildlife, recreation, navigation and other scenic and aesthetic values as well as preserve high water-quality standards. Under the rule, any authorization for the use of water that would be in conflict with preserving these instream flow resources can be authorized "only in situations where it is clear that overriding considerations of the public interest will be served."

The 1980 rule established instream flows for the Puyallup River and closed the White River to all further consumptive appropriations. Before Ecology can recommend issuing a consumptive water right in a closed basin, it must find that:

1. The water use must serve a public interest.

2. The public interest served by the water use must outweigh or "override" the harm to public interest associated with not maintaining the base flows (closure) of the surface water. This latter provision is generally referred to as "overriding considerations of public interest" – or simply "OCPI."

The potential environmental effects associated with the development of Lake Tapps as a water supply are complex. Ecology is in the process of evaluating public interest issues, including an evaluation of the overriding concern of the public interest. This assessment will include steps to:

- Analyze the public interests potentially benefited by the water supply project (*e.g., instream flow protection, providing a new and significant source of public water supply, supporting maintenance of Lake Tapps and its contributions to ground water recharge, recreation, aesthetics, etc.*).

- Analyze public interests potentially harmed by the water supply project (*e.g., reduction in daily average flows downstream of the water supply project because of water supply diversions, impacts to Lake Tapps recreational levels during dry years, etc.*).

Ecology seeking public input

There are three broad categories of issues that Ecology is evaluating regarding Puget Sound Energy's Lake Tapps proposal – **public water supply/demand** (including the proposed development schedule), **water availability/environmental effects** and **public interest**. Based on the information provided in the meeting presentations and the hand-outs, Ecology would like input regarding the following:

Questions about public water supply and demand, including proposed development schedule issues:

- Is Ecology adequately considering the elements necessary to evaluate the public water supply, demand, and potential development schedule associated with this project?
- Do you have any specific comments you wish to make to Ecology regarding public water supply and demand?

Questions about water availability and environmental effects issues:

- Is Ecology adequately considering the elements necessary to determine the availability of water and potential environmental effects that would be associated with these applications?
- Do you have any specific comments you wish to make to Ecology regarding water availability and/or potential environmental effects?

Question about public interest issues:

- Do you have any specific comments you wish to make to Ecology regarding the public interest analysis?